What is claimed is:

1. A transport system for transporting wavelength division multiplexed signals by applying time division multiplexing of a whole signal of a client including client overhead transparently and attaching an additional overhead to said whole signal of said client and transporting a time-division-multiplexed signal represented by one wavelength containing an additional overhead from own network to another network.

2. A transport system according to claim 1, wherein said transport system is an optical transport system.

3. A transport system according to claim 1, wherein said additional overhead contains bits defining frame synchronization or channel selection, and an insertion cycle of said bits is shorter than a frame cycle of client signals.

4. A transport system according to claim 1, wherein said additional overhead contains bits defining error correction, and said system performs error correction.

5. A transport system according to claim 4, wherein quality degradation of the signal or failure detection is performed by an error correction bit counter.

6. A transport system according to claim 1, wherein said additional overhead contains bits defining data storage for applying negative stuffing to adjust a frequency of a client clock, and positive stuffing is applied by inserting said bits in a payload.

7. A transport system according to claim 6, wherein said additional overhead contains bits defining stuffing information.

8. A transport system according to claim 1, wherein said time division multiplexing is based on bit interleaving or byte interleaving.

9. A transport system according to claim 1, wherein said system contains option means for enabling each client to select automatic restore function for line failure.

10. A transport system according to claim 1, wherein said system directly accommodates a LAN interface from a client terminal and has a routing function for routing between lowspeed interfaces or to a lowspeed interface of an opposing apparatus.

11. A transport system according to claim 10, wherein said time division multiplexing is performed after mapping lowspeed signals received from a client terminal to respective highspeed channels.

12. A transport system according to claim 1, wherein control of monitoring of input/output operations of lowspeed client signal is performed by analogue means.

13. A transport system according to claim 1, wherein said system is a ring type network.

14. A transport system according to claim 13, wherein a cross connecting switch for selecting signal paths is comprised by a selector.

15. A transport system according to claim 13, wherein sub-network monitoring for one ring network is based on a simple network management protocol, known as SNMP.

16 A transport system according to claim 1, wherein, for multiplexing synchronized and non-synchronized signals, said system is provided with a synchronizing section for attaching said additional overhead to a digital signal for use in positive and negative stuffing and

synchronizing the digital signal to a frequency of a network synchronizing clock to generate a synchronized digital signal; and a time division multiplexing section for time division multiplexing of the synchronized digital signal.

17. A transport system according to claim 16 comprising:

a multiplexer comprised by

a clock supply section for supplying network synchronizing clock signals;

a receiving section for optical-electrical conversion of a lowspeed optical signal to regenerate a lowspeed digital signal;

a frequency synchronizing section for attaching an additional overhead to the lowspeed digital signal, applying positive or negative stuffing with reference to the additional overhead, and synchronizing an original frequency of the lowspeed digital signal to a synchronizing frequency of said own network;

a digital multiplexing section for time division multiplexing a plurality of synchronized lowspeed digital signals;

a common control section for controlling the frequency synchronizing section and the digital multiplexing section; and

a sending section for converting time division multiplexed signal to a highspeed optical signal and forwarding to a communication path; and also

a demultiplexer comprised by:

a multi/demultiplexing section for optical-electrical conversion of a highspeed optical signal to regenerate the highspeed digital signal;

a frequency restoring section for restoring the synchronized lowspeed signal to said original frequency of the lowspeed signal by applying positive or negative stuffing with reference to the additional overhead attached to the lowspeed digital signal;

a common controller for controlling the multi/demultiplexing section and the frequency restoring section; and

a sending section for converting the restored lowspeed digital signal to an optical signal and forwarding to a lowspeed transport apparatus.

18. A transport system according to claim 17, wherein said frequency synchronizing section is provided only in a channel receiving the non-synchronized lowspeed digital signal in the multiplexer and said frequency restoring section is provided only in a channel outputting the non-synchronized lowspeed digital signal in the demultiplexer.

19. A transport system according to one of claim 17, wherein said frequency sync section is comprised by: a clock counter; an x-bit buffer memory; an (x-1)-bit buffer memory; control pulse generation sections; a control pulse generation controller; a negative stuffing overhead insertion section; a staff information transport overhead insertion section; a clock extraction section for extracting clock signals from input data including a synchronized digital signal or a non-synchronized digital; and an apparatus clock generation section.

20. A transport system according to one of claim 18, wherein said frequency sync section is comprised by: a clock counter; an x-bit buffer memory; an (x-1)-bit buffer memory; control pulse generation sections; a control pulse generation controller; a negative stuffing overhead insertion section; a staff information transport overhead insertion section; a clock extraction section for extracting clock signals from input data including a synchronized digital signal or a non-synchronized digital; and an apparatus clock generation section.

21. A transport system according to claim 19, wherein said x-bit buffer memory and said (x-1)-bit buffer memory accumulate input data; said clock extraction section extracts clock signal of the input data signal; said clock counter counts extracted clock signals and forwards a count result to said control pulse generation controller, which operates said control pulse generation sections by comparing a clock count decided by said apparatus clock generation section with the clock count in said control pulse generation controller.

22. A transport system according to claim 19, wherein, when a clock count matches a regulation count, bits are successively read from the x-bit buffer memory and not read from the (x-1)-bit buffer memory, and so reported to the stuffing information transfer overhead insertion section; and when a clock count is lower than the regulation count, reading of bits from the x-bit buffer memory is stopped and bits are not read from the (x-1)-bit buffer memory, and so reported to the stuffing information transfer overhead insertion section; and when a clock count is higher than the regulation count, writing the x-bit buffer memory is temporarily stopped and bits are read from both the x-bit buffer memory and the (x-1)-bit buffer memory; and information read from the (x-1)-bit buffer memory is transferred to the negative stuff overhead insertion section; and so reported to the stuffing information transfer overhead insertion section.

23. A transport system according to claim 17, wherein said frequency restoring section is comprised by: an apparatus clock generation section for extracting a client clock from a transport path and converting the client clock to an apparatus clock; a x-bit buffer memory; a control pulse generation section; a control pulse generation controller; a negative stuff overhead read circuit, a staff information transfer overhead read circuit; a selector circuit for selecting an output from the negative stuff overhead read circuit or an output from the x-bit buffer memory; and a voltage control oscillator.

24. A transport system according to claim 23, wherein highspeed data are written to said x-bit buffer memory and simultaneously, stuffing information transfer overhead information is read by the stuffing information transfer overhead read circuit, and the stuffing information transfer overhead information thus read is transferred to the control pulse generation controller.

25. A transport system according to claim 23, wherein

if stuffing is not required,

said voltage control oscillator reads bits successively from the x-bit buffer memory at a frequency synchronized to the apparatus clock frequency; and

if positive stuffing is to be applied several times,

said control pulse generation controller averages positive stuffing over a prolonged application interval so as to control read-clock by controlling said voltage control oscillator; and

if negative stuffing is to be applied several times;

said control pulse generation controller averages negative stuffing over a prolonged application interval so as to control read-clock by controlling said voltage control oscillator and simultaneously, reads information from the negative stuffing information overhead read circuit, and said selector circuit switches from the x-bit buffer memory to the negative stuff overhead read circuit so as to generate a continuous data.

26. A transport system according to claim 1, wherein said system includes: a synchronization section for inserting an additional overhead to a digital signal, and applying positive stuffing according to said additional overhead so as to synchronize client frequency to an apparatus frequency; a time division multiplexing section for time division multiplexing the synchronized digital signal; and a multi/demultiplexing section for demultiplexing time division multiplexed synchronizes signal so as to restore an original digital signal.

27. A transport system according to claim 17, wherein multiplexed signals are further subjected to optical time division multiplexing.

28. A transport system according to claim 18, wherein multiplexed signals are further subjected to optical time division multiplexing.

29 A transport system according to claim 26, wherein multiplexed signals are further subjected to optical time division multiplexing.

30. A transport system according to claim 27, wherein multiplexed signals are further subjected to wavelength division multiplexing.

31. A transport system according to claim 28, wherein multiplexed signals are further subjected to wavelength division multiplexing.

32. A transport system according to claim 29, wherein multiplexed signals are further subjected to wavelength division multiplexing.

33. A method for wavelength division multiplexing by first applying time division multiplexing transparently to whole signal of a client and attaching an additional overhead to the whole signal and representing the whole signal having the additional overhead by one wavelength and transporting a wavelength division multiplexed signal through a network.

34. A method according to claim 33, wherein, for multiplexing synchronized and non-synchronized signals, said method comprises additional steps of: adding an additional overhead to a digital signal, applying positive or negative stuffing according to overhead information, synchronizing a client frequency to a network frequency, and applying time division multiplexing for transport of a digital signal to be demultiplexed by a receiving equipment to regenerate an original digital signal.

35 A method according to claim 33, wherein, for multiplexing synchronized and non-synchronized signals, said method comprises additional steps of: adding an additional overhead to a digital signal, applying positive stuffing according to overhead information,

synchronizing frequencies, and applying time division multiplexing for transport of a digital signal to be demultiplexed by a receiving equipment to regenerate an original digital signal.